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DATAMATION.

AUGUST 15, 1988
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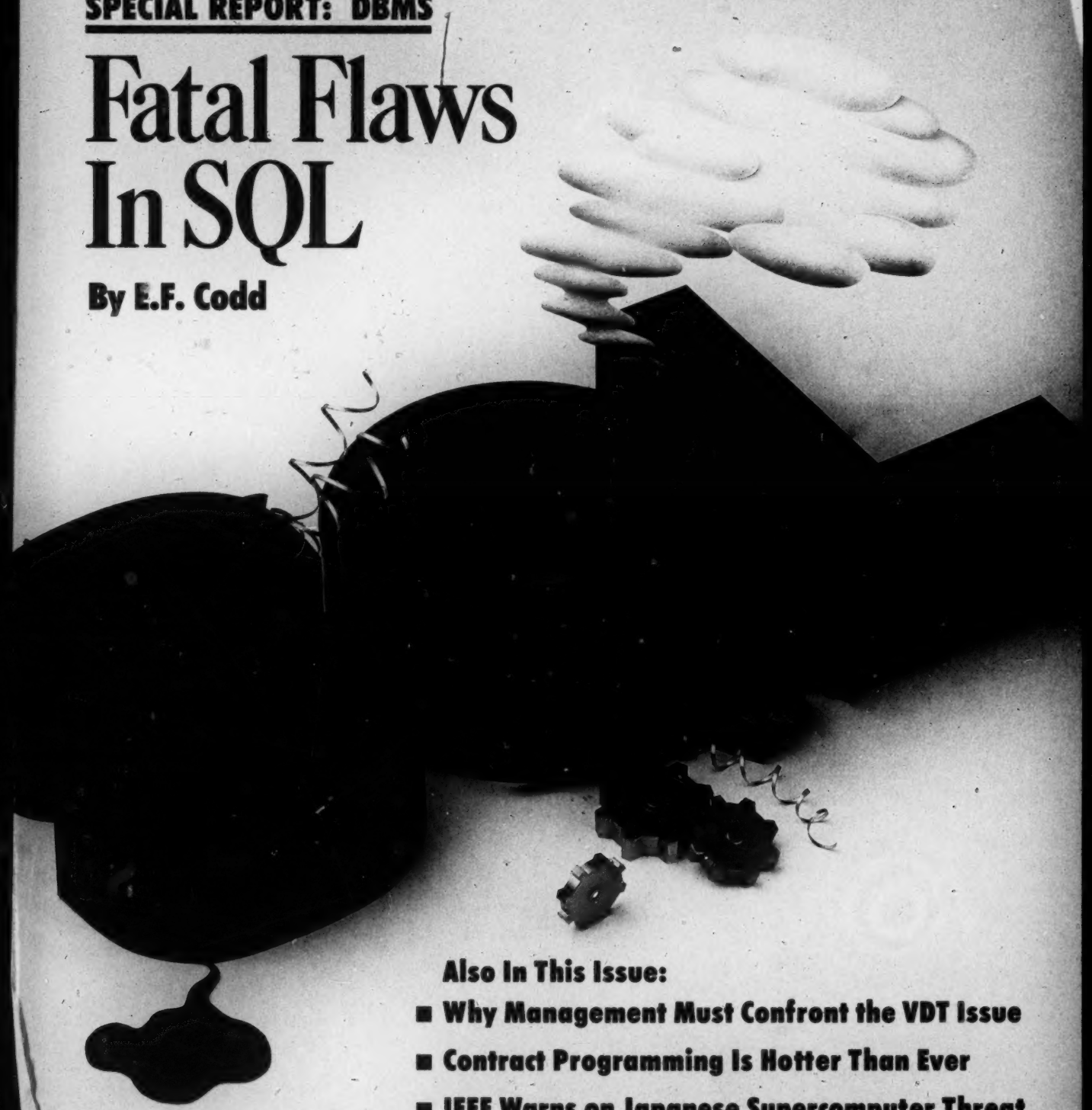
SPECIAL REPORT: DBMS

Fatal Flaws In SQL

By E.F. Codd



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DATAMAT

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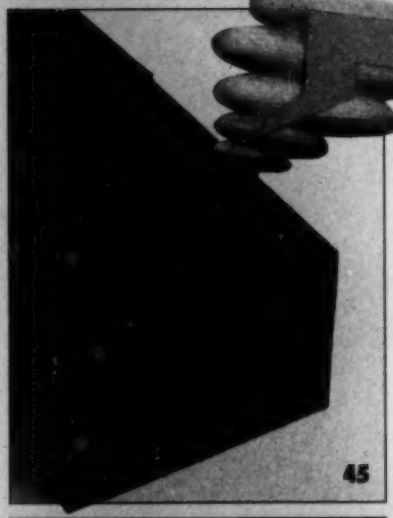

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CALLING ALL USER GROUPS!
Please send information about your User Group so it can be included in DATAMATION's upcoming User Group Directory. If possible, please include address, phone number, number of members, names of officers, date of next meeting, statement of purpose, and a list of services provided. The address is:
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1987 JESSE H. NEAL AWARD

Editorial

Time To Go On The Offensive

It's neither the biggest nor the richest company in its field, yet that hasn't prevented Con Edison from assuming a leadership position in managing information age workers. Specifically, the 23rd-largest U.S. utility has gone on the offensive in protecting the health of employees who use video display terminals, the subject of Willie Schatz's Behind the News report (p. 39).

Not satisfied with steps it has already taken, such as eye exams and work breaks, Con Ed plans to embark soon on an ergonomic training program to teach employees how to avoid screen glare, among other things. Unfortunately, several other user organizations have taken a defensive posture on VDTs—investing sums in lawyers and lobbyists to thwart legislative moves to govern VDT use in the workplace.

We find little fault with organizations that oppose VDT-use laws on Constitutional grounds—they have every right to oppose government intrusion into their markets. But we can't help wondering whether the money wouldn't be better spent on research and retrofits. Although more states have rejected VDT-use legislation than have approved it—the score is 24 states to nine at this point, according to one association—the issue is unlikely to go away. Local governing bodies will step in where state legislatures or employers fail to act, just as Suffolk County, N.Y., has recently done. The sheer number of VDTs in use—30 million by one estimate—and the growing populations of pcs and workstations will require that greater attention be paid to health concerns surrounding such modern-day tools.

"It's an issue we can't afford to turn our back on," says Paul Berger, president of the influential Society of Information Management. "But we shouldn't do an overkill either." He points out that although no scientific studies have concretely linked VDT use to health problems, some U.S. companies are already improving the environments of VDT workers, playing catch-up to their counterparts in Europe and, he suspects, Japan. "Maybe we weren't as conscious of those environments when people were using typewriters," he says.

Being conscious of such matters early on certainly hasn't cost Con Ed anything. Its ROI ranks second among utilities. Maybe the best offense isn't a good defense after all. Maybe it's just a good offense—especially where the health of workers is at stake.

Tim Mead

TIM MEAD
EDITOR-IN-CHIEF

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Letters

Distortion

"The Supercomputer Breaks Through" (May 1, p. 50) distorts Boeing Computer Services' pricing and unfairly positions the company as being grossly overpriced for its services.

The article [quoting John Taylor, manager of Du Pont's scientific computer division] states that Boeing Computer Services charged a customer "$10,000 per cpu hour." To set the record straight, Boeing Computer Services did not offer pricing based on cpu hour to any customer.

In point of fact, there are no acceptable industrywide cpu pricing standards. Further, rate comparisons based on cpu hours alone can be misleading. The run times of specific jobs on a machine are heavily influenced by the system configuration. For example, using a solid-state storage device, run times on our machines have been lowered from 24 to four hours and cpu hours have also been reduced considerably.

Boeing Computer Services has and will continue to provide its customers with rates that are competitive with university and in-house installations. We would welcome the opportunity to provide an industry-competitive or benchmark quote to any prospective customer.

SURESH SHUKLA
National Product Manager
Boeing Computer Services
Bellevue, Wash.

Israeli Realities

I would like to comment on your article entitled "Israel: Where Necessity Mothers Innovation" (April 1, p. 54-11). The article states that Israel lacks "centralized planning for high technology." This is incorrect at least in one respect. Computers and telecommunications in academia are being coordinated by a central government-financed organization. We currently have a network spanning 47 mainframe systems located in over seven universities with connections to the European Academic Research Network (EARN), as well as to BITNET and CSNET.

This centralized planning has allowed us to coordinate our efforts and, sometimes, to learn from others' mistakes. Currently, the U.S. research and academic networks are attempting to coordinate their efforts since they now realize that each is running a parallel network. The DOD (ARPANET), the DOE (HEPNET), the NSF (NSFNET), the list is endless. The problem now is to establish a centralized coordinating unit that will remove the redundant links that currently crisscross the continental United States and to create a single high-speed backbone of 1-3Gbits per second. Israel is not at the stage to create networks of that speed, but at least we are able to coordinate our efforts.

Your article did not cover the major reason companies in Israel are not able to produce up to their potential. Telecommunications was touched upon but was covered as a side note to the overall problem. A 64Kb international link from the U.S. to Europe costs approximately $4,000. The cost of the European end is approximately $9,500 (based on a 10-country average). This represents a total monthly cost of $13,500 for a 64Kb link. On the other hand, Israel's sole PTT, Bezek, charges $21,000 for the same link, bringing the total monthly costs up to $25,000 (when including the American side of the link).

The situation for data communications within Israel is no better. Typical 64Kb digital tariffs are between three-to-five times the European average. Small software houses cannot afford the exorbitant prices that Bezek demands on behalf of the services they supply.

HANK NUSSBACHER
Computer Consultant
Israel

Health and Networks

Regarding the McDonnell Douglas Information Systems profile in the DATAMATION 100 (June 15, p. 99), your description implies that the company is no longer in the business of providing either health information or network systems to customers. This couldn't be farther from the truth.

While McDonnell Douglas Information Systems Co. did sell a minor physician systems operation, the company continues to be a major health care systems provider. In fact, one in every four U.S. hospitals uses a McDonnell Douglas health system.

Further, our Tymnet network is one of the two leading public data communications networks in the U.S. It continues to be a cornerstone in our ability to offer customers total systems integration solutions.

JEREMY J. CAUSLEY
President
McDonnell Douglas
Information Systems Co.
Irvine, Calif.

The New Era of DBMS Integration

Integration and connectivity may be popular buzzwords to toss about the computer industry these days, but users of database management systems are serious about linking their databases and the mainframe, minicomputer, and microcomputer levels, according to the findings of an exclusive DATAMATION poll.

BY DAVID R. BROUSELL

DBMSs have become an essential part of computing, and, as such, they are presenting IS managers with a new challenge—integrating DBMSs at all levels of their systems organizations. Of greatest interest is melding DBMSs in their data centers with those on end users' desktops.

Three out of four IS managers plan to integrate their mainframe DBMSs and the database systems used on their organization's pcs and workstations—one of many findings in an exclusive DATAMATION survey, conducted in May. The survey drew 158 responses from 800 users who received questionnaires, a response rate of 19.8%. The sample was limited to users at IBM or IBM-compatible mainframe sites.

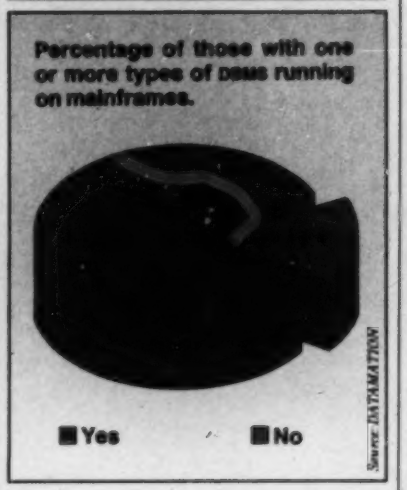
Paper Sculpture Illustration by Alin

Integration intentions drop significantly at other levels: only 34% of surveyed users say they plan to integrate their mini DBMSs and their mainframe counterparts, and even fewer—19%—see any connection from pcs to minis.

At the data center level, a large majority—83.6%—say they have one or more types of DBMSs running on their mainframes. On the DBMS side, IBM is still clearly dominant, with 56.4% of respondents saying they currently employ an IBM DBMS on their system. Software AG, Reston, Va., and Cullinet Software, Westwood, Mass., came in second and third with 17.8% and 13.9%, respectively.

When queried on their buying plans, users are strongly in favor of Oracle Corp.'s DBMS products. Although just 2% of survey respondents currently use the company's products on their mainframes, of users surveyed, 31.3% plan to purchase Oracle database software for those machines. The results confirm the 1988 DATAMATION/Cowen & Co. large-scale systems

DBMS Diversity



survey, which also showed Oracle's momentum (see "IBM Puts on the Gloves with MVS/ESA," May 15, p. 56). IBM again took first place in this category with 56.3% of mentions. Digital Equipment Corp. places third with 12.5%—further evidence that the lines between mainframes and high-performance minicomputers are nearly completely blurred. Software AG, at 6.3%, drops to fourth, tied with five other companies. Cullinet was not mentioned.

A minority percentage of respondents—34.7%—indicate they are now running or intend to run separate DBMSs on their minicomputers. As might be expected, a majority—58.5%—of those mini separatists are on DEC platforms. Some 31.7% of them are on IBM minis, while 12.2% are using Hewlett-Packard systems.

The overwhelming choice as DBMS supplier for those users currently running separate database software on their minis is Oracle, which was mentioned 20% of the time. HP, IBM, and Cincom followed, each with single-digit percentages. For those users planning to purchase separate DBMSs for their minis, Oracle again wins the popularity contest, garnering 63.6% of mentions. Relational Technology, heretofore a single-digit player, jumps to second place with 27.3%, and DEC takes third with 9.1%.

At the microcomputer level, 65% of survey respondents are either using or plan to use a DBMS on their personal computers/workstations. More than three quarters of respondents have IBM or compatible pcs. For those currently using a DBMS, 53.4% cite Ashton-Tate as their supplier, with Oracle in the number two spot with 9.6%. But the tables may turn in the future: Oracle captures 37.5% of plan-to-purchase responses versus 25% for Ashton-Tate.

Many Plan DEC–IBM Integration

Only a small percentage of those participating in the survey—23.5%—say they have DBMSs running on their DEC VAXs, but 46.2% of these people indicate they plan to integrate it with their IBM systems. A nearly corresponding number—43.1%—say they have particular applications they want to integrate with their central DBMSs. The application mentioned most frequently is personnel, followed by financial services, accounting, materials requirements planning, marketing/sales, customer accounts, mortgages, order entry, and shipping.

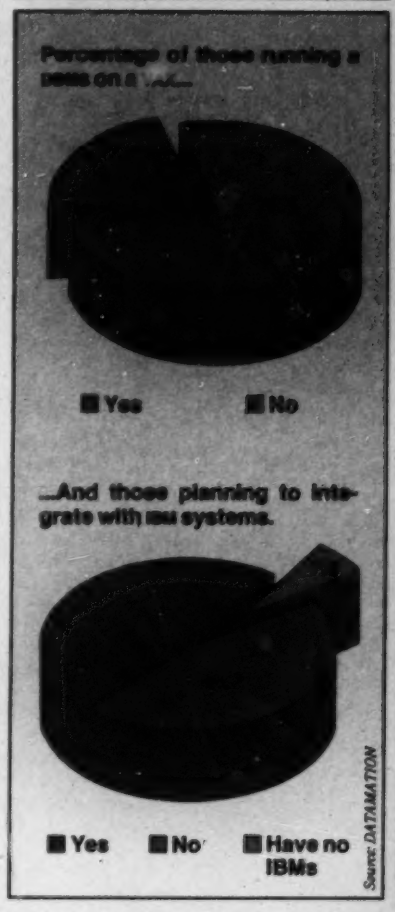
There are also a wide variety of other applications that users are interested in integrating with their central DBMSs. Some of these, as revealed by single mentions by survey respondents, are budgeting, blueprints, CAD/CAM, CASE, claims processing, geographic information, international banking, trading, and payments, mortgage-backed securities, oil and gas production, policy writing/rating, process control, production reporting, contract management and customer service, scheduling, service request/customer record, custom software, marketing information systems, and student record systems.

An overwhelming majority of respondents—85%—say they plan to accomplish this integration themselves.

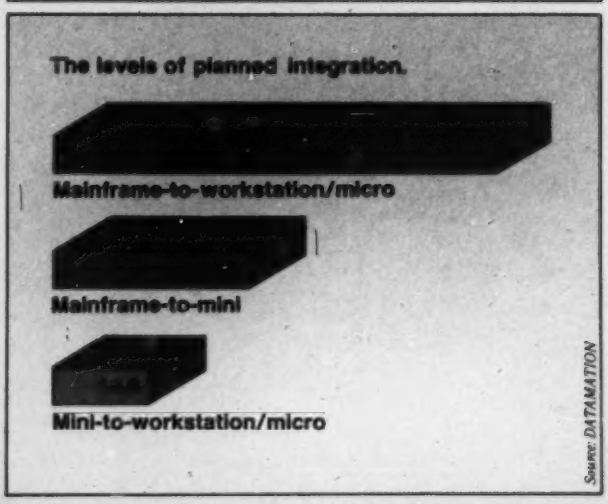
A surprisingly low percentage of survey respondents indicate any plans to buy a distributed DBMS. Only 21.1% say they have such plans.

Relational technology, on the other hand, has clearly become the standard type of DBMS technology, with the survey showing 69.2% of respondents currently using a relational DBMS. Of those respondents who are not using a relational product now, 37.8% say they are planning to convert to one. ■

The Courtship of VAX



Targeted Integration



Charts by Catherine Francis

QUARTERLY UPDATE

DATAMATION PRICE WATERHOUSE SURVEY

Big MIPS, Little Plans

BY NORMAN STATLAND

Over 60% of the members of the DATAMATION/Price Waterhouse executive panel expect to increase the MIPS capacity of their shops within the next 12 months. A minority of IS shops now have written systems development plans that are integrated with the corporate plan. These are among the chief findings of a DATAMATION/Price Waterhouse survey focused on management issues such as the administration of IS departments; the delivery of increased services—including leading-edge technologies—to user constituencies; and the attempt to hold close to current IS budget levels.

Planning

Only 40% of respondents have a written overall plan for systems development that is integrated with the corporate plan. Computer services and finance are the only sectors to report over 50% of organizations with such plans (see "Systems Development Planning Activities"). In contrast, less than 40% of the organizations in education/research and retail/distribution have written, overall systems development plans integrated with the corporate plan. Big operations are the best organized: in those with over 5,000 employees, 58% of respondents say their written overall plan is integrated with the corporate plan.

In response to the question, "Is there mutual agreement among department heads on development priorities?" 49% reply "yes," 50% reply "no." Perhaps more surprising is that only 30% of the respondents say they have separate development and maintenance budgets, mostly from the government and computer services sectors, which tend to organize along functional lines. Retail/distribution operations and utilities are least likely to have separate development and maintenance budgets.

Answers in the affirmative in the areas above indicate that the IS department plays an important role within the organization structure, and that user departments have become experienced in dealing with development activities.

Almost 60% say their organization has a separate data administration function/group/person. Again, the size of the company appears to be the key factor: in organizations of over 1,000 employees, two thirds or more have separate data administration functions. Here, "yes" answers demonstrate formal recognition of technology's impact on the corporate database.

Sixty-one percent of the respondents expect the MIPS rates of their cpus to increase in the next 12 months; 37% anticipate a constant MIPS capacity. Only 7% expect a decrease. Companies of over 1,000 employees will increase their MIPS rates most significantly. The largest planned increases in these rates are reported in the utilities and process manufacturing industries. The distribution of MIPS rate utilization by industry is shown in "Hardware Capacity Changes."

AUGUST 15, 1988

- Half the respondents say there is mutual agreement among department heads on development priorities.
- Computer services and finance are the only sectors in which over 50% of the organizations have integrated systems development plans into their written corporate plan.
- Utilities and process manufacturing industries will see the most MIPS growth in the next year.
- Only 39% say they'll use automated analysis and design tools—CASE—more extensively during the next 12 months.

Over two thirds of respondents from midsize and larger firms are using increased MIPS to solve the problem of developing integrated systems, i.e., systems serving large numbers of end users, accessing common data.

Software Issues

An interesting trend emerges from answers to the question, "Do you expect your efforts on hardware contingency and disaster planning to increase?" Only 43% will increase, while 55% say they will stay the same. Those respondents most conscious of their need to increase their contingency and disaster planning activities are in the utilities and government sectors. (The distribution of security efforts by size of company is shown in "Data Security Software Implementation Efforts"). For the relatively small sector of respondents—38%—who expect to increase their efforts in implementing data security software, the majority says that when the importance of data security is recognized, the activity level typically almost doubles.

While a great deal of attention is being focused on the use of CASE tools for analysis and design, only 39% of the respondents will increase their use of such tools to increase productivity within the next 12 months. Organizations with over 5,000 employees are the trendsetters in the use of CASE tools.

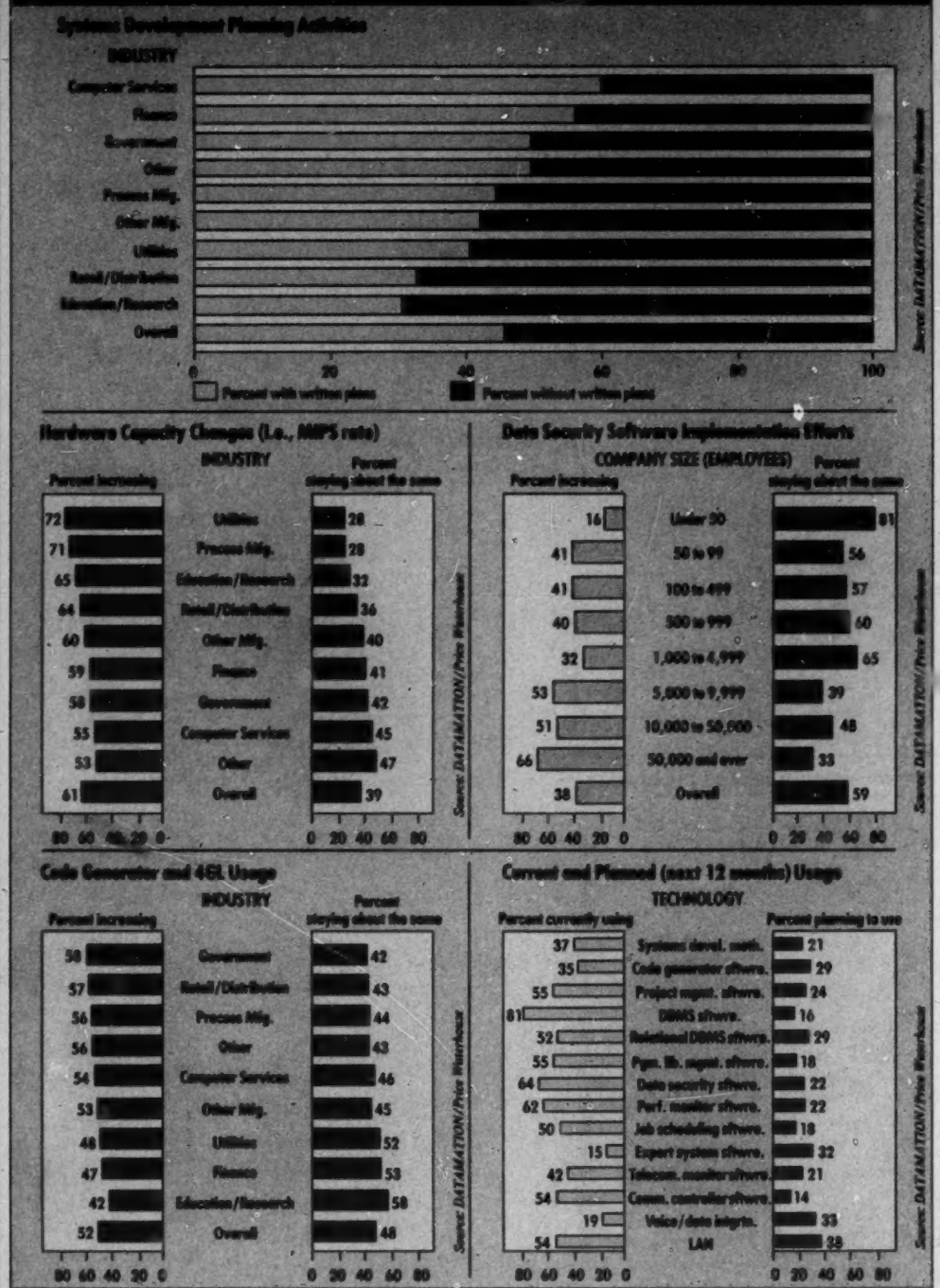
More positively, 52% of the organizations expect to increase the use of code generator software and/or fourth generation languages in the next 12 months. This trend is consistent throughout all organizations of over 100 employees (see "Code Generator and 4GL Usage"). Similarly, while 43% of the organizations report a planned increase in the use of a software-based data dictionary tool, 55% indicate that the levels of data dictionary use would stay the same.

In our experience, data dictionary software is perhaps the most significant tool in developing systems through prototyping that could result in considerable integration between dp functions shared by various departments.

Perhaps the most disappointing trend, in terms of increasing the level of professional discipline within the information systems industry, is that only 25% of the organizations intend to increase the use of a professionally developed systems development methodology. It is difficult to see how the 72% that says it will "stay the same" can evaluate the effectiveness of their systems development activity. We have found it very difficult for internal administration to compare the effectiveness of systems development activities with the general level expected in the industry. Incidentally, almost two of every three IBM mainframe installations report use of a professional systems development methodology.

Forty seven percent of respondents expect the degree of voice and data inte-

Trends for the Next 12 Months



gration among their communications networks to increase over the next 12 months. The significant increase is within companies of over 5,000 employees. Approximately one in every four installations is a user of integrated voice and data facilities; by 1990 the number may increase to four out of 10 installations.

It is significant that only 37% of the respondents expect an increase in the number of applications that have parts of their processing done at more than one dp center in the form of distributed processing. The dividing line seems to be 5,000 employees: 57% of companies below that level say their distributed processing will stay the same, while 5% intend to decrease the amount of distributed processing. The latter is evidence of the backlash caused by difficulties in implementing distributed processing activities.

The problem of integrating advances in technology into current IS management practices has been present since the beginning of IS. DATAMATION/Price Waterhouse constructed a matrix of current and planned use of various technologies (see "Current and Planned Usage"). Not unexpectedly, most organizations indicate that expert systems, voice and data integration, use of code generators, use of a standard systems methodology, and management of telecommunications receive the least amount of attention. This is yet more evidence of a maturing set of IS management practices.

The survey reveals that the two IS organization areas due to receive the largest amount of management attention in the next 12 months are integration of IS development plans with corporate business development plans, and agreement among department heads on IS development priorities.

On the positive side, 81% of respondents say that database software is used as a technical tool and 52% say they use relational databases in their organizations. Over 50% report doing some form of automated job scheduling.

Surprisingly, the leading technology-based activities that are planned are the increased use of local area networks, voice and data integration, expert systems, code generators, and the increased use of relational database technology. All other areas lag significantly behind. ■

Norman Statland is the national director of information resource management services at Price Waterhouse. He is the author of Controlling Software Development *(John Wiley & Sons, New York, 1986).*

Chart by Photographics